Chapter 1

Getting Started with the Windows SharePoint Services 3.0 Platform

MICROSOFT EXAM OBJECTIVES COVERED IN THIS CHAPTER:

- ✓ **Deploy Windows SharePoint Services 3.0 (WSS)**
  - Configure WSS server roles
  - Configure WSS topology

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Since you are reading this chapter, it means you are committed to learning how to use and administer Windows SharePoint Services (WSS) 3.0. Perhaps this is your own personal commitment to become familiar with a new technology that has become a leader in the field of collaboration. We hope this is so — but since we are also realists, we know you might be here because you have been given another hat to wear in your organization. Don't worry if that describes you. Don't worry if you are the network or SQL administrator and have now been also charged with the SharePoint services for your organization.

And, also equally important, you are most likely here because this book will guide you to gain the knowledge to pass the Microsoft 70-631 exam. Certification credentials show you understand and know how to use a product. This book is built around the exam objectives; as you gain knowledge in those areas you need for implementing WSS 3.0, you are provided with exam questions and key topics to augment your learning and studying.

If there is any one word of advice that we can give you as you proceed through this book, it is to *plan*. All too often, we have worked with companies that have put up WSS sites only to find that their topology has gotten completely out of hand because users became so enthusiastic that the sites and content grew too rapidly. "Wow, how terrific!" you might be thinking. But a SharePoint implementation can become unwieldy and not fulfill the objectives it was built to meet. Therefore, our purpose as we travel through this book together is not only to provide you with the necessary tools to enable you to configure your SharePoint site, but also to show you best practices along the way.

Before launching into the specific installation, configuration, management, and customization areas of WSS 3.0, you need to learn the building blocks. It's part of our "strong foundation" approach. To understand the design goals of WSS 3.0, you will begin with an overview of the service. Your next step is to understand the technology. You will learn those features that collaborate to make WSS 3.0. Once you understand what a WSS 3.0 solution is able to provide, you need to determine how it fits into your organization. As in most of its applications and services, Microsoft provides the building blocks, but you need to use them to design an implementation that serves your organization's needs. The last section of this chapter, and hence the last part of the WSS 3.0 foundation, is the architecture. You need to grasp the logical architecture of a WSS 3.0 deployment so that you can plan the physical structure accordingly. With all that said, let's start building!

Overview of Windows SharePoint Services 3.0

To understand WSS 3.0 is to understand collaboration. Originating from the Latin *com-* ("with") and *laboro* ("work"), collaboration is a great word and, better yet, a terrific concept for businesses.

Wikipedia defines collaboration as a recursive process where two or more people work together toward an intersection of common goals — for example, an intellectual endeavor that is creative in nature — by sharing knowledge, learning, and building consensus. It further mentions that collaboration can often provide better results through decentralization and does not always require leadership. Thus, when using collaborative technologies in business, the sum of the parts can be greater than the whole.

As web-based technologies expanded, the challenge to provide an environment for creating easily used public workspaces and collaborative sharing became more apparent to companies. The conventional method of sharing data and folders over the network no longer provided the solution. Not only did users waste valuable time searching through the file system for their needs, but administering security on the network file system became paramount, with users needing a variety of access to files within the same folder. Another collaborative technique used by many was to exchange data via email. Again security became an issue. Archiving, storage limits, and difficulty in maintaining audit history made this technique fall short of organizations' collaborative needs.

It became apparent that minimizing data movement was the key to both stabilizing data access and security. With this goal in mind, Microsoft conceived SharePoint Services.

The Evolution of Microsoft Windows SharePoint Services

Early concepts of Microsoft's collaboration tool used Team Folders and the Digital Dashboard to enable users to define their own collaboration spaces. SharePoint Team Services changed the one-way publishing paradigm of company intranets into an organized and structured venue, thus allowing users to save and share their information directly on the Web. The next iteration, Microsoft WSS 2.0, leveraged Windows SharePoint Services and moved the storage of common data off the web server onto the SQL Server. WSS 3.0 and Microsoft Office SharePoint Server 2007, which is built on the WSS 3.0 foundation, encompass the most recent version of this information management software. They provide several communication tools to create a workspace in which users can readily collaborate and communicate in a secure environment.

WSS 3.0 is designed to enable organizations to improve team productivity and increase business process efficiency.

With that in mind, Microsoft built a set of design goals for WSS 3.0:

- Storage
- Security
- Management
- Deployment
- Site Model
- Extensibility
- Collaboration

These goals have evolved into the platform services for WSS 3.0 and are discussed later in this section.

Let's begin our journey by examining the components of WSS 3.0:

- What is Microsoft WSS 3.0?
- Why should we use WSS 3.0?
- What are the new and enhanced features?

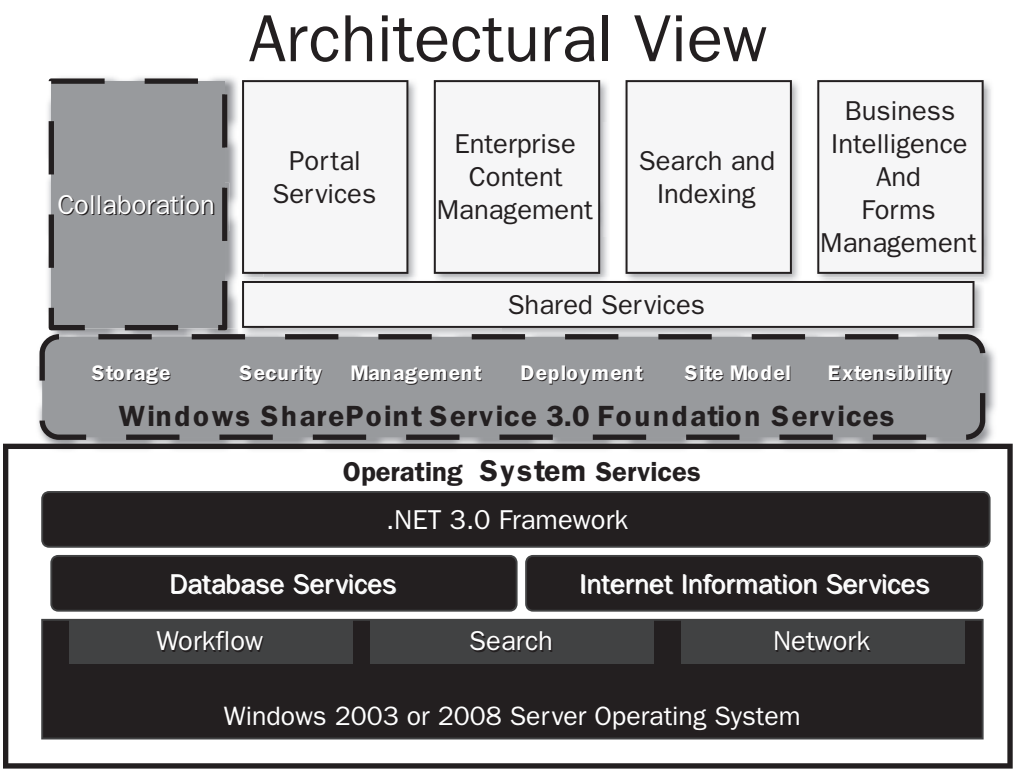
What Is Microsoft WSS 3.0?

Most likely you have been charged with either initiating or updating a SharePoint infrastructure. Well, you will not get far in your endeavor if you do not understand WSS 3.0 and its role as the foundation for all the SharePoint technologies.

When we ask users to define WSS, they often tell us it is the "free" version of SharePoint. Well, even though it is true that WSS is a free download from Microsoft, it is more than that. All SharePoint technologies are built on this service. Take Windows Workflow Foundation as one example; this technology would not even exist were it not for the persistence service of WSS 3.0.

The most important concept to grasp is that WSS 3.0 is built on Windows Server 2003 or Windows Server 2008 and provides the foundation platform and collaboration features for Microsoft SharePoint products and technologies. The services provided by WSS are shown enclosed in the dashed areas of Figure 1.1.

FIGURE 1.1 Windows SharePoint Services 3.0, architectural view



As noted in Figure 1.1, Microsoft Office SharePoint Server (MOSS) 2007 builds on the technologies of WSS 3.0 to proide the following applications and services:

Portal Services MOSS 2007 portal technology allows you to create and manage gateways to all the features and functionality of SharePoint technologies. It also provides users with a greater personalization of their SharePoint experience.

Search You can use MOSS 2007's Search feature to query documents, people, and enterprise applications.

Enterprise Content Management Enterprise content management in MOSS 2007 includes document, records, and web content management. These services include full web publishing; enterprise-wide documents and records retention, which includes auditing and security compliance; and approval workflows.

Business Processes Workflow, one of the business processes of MOSS 2007, facilitates collaboration among users for such processes as document approval, feedback collection

for document review, and disposition approval for archiving information. The InfoPath forms service assists in collecting and validating business process information.

Business Intelligence You are able to integrate your line-of-business (LOB) application by using the Business Data Catalog (BDC) in MOSS 2007. Furthermore, Business Intelligence (BI) employs Excel Calculation Services to manage and share Office Excel 2007 workbooks and reports, integrates with SQL Reporting Services, and includes key performance indicators (KPIs) to track the progress of your business goals.

The term "SharePoint Technologies" is used throughout this book to encompass both WSS 3.0 and Office SharePoint Server 2007 products and services.

In the architectural view of WSS 3.0, each layer provides the necessary services that are consumed by the layers above them. Therefore, to understand the topology it makes sense for us to study these layers starting with the foundation layer of the operating system service and working our way up.

The Operating System Services

The foundation layer is the operating system services. WSS 3.0 is built on these technologies and services, which were introduced in Windows Server 2003 and extended in Windows Server 2008. You can install WSS 3.0 on the Standard, Enterprise, or Web edition of Windows Server. As a best practice, have the service packs and patches up-to-date on your server.

If you install WSS 3.0 on Windows Server Web edition, you must use a remote SQL Server to store the WSS databases.

Windows Server provides the system and networking services to all the upper layers of the SharePoint technologies. The internal relational database that is the data store within Windows Server itself provides the repository for Windows roles and features as well as such services as Active Directory Rights Management Services, UDDI Services, Windows Update Services, and Windows SharePoint Services.

Microsoft SQL Server provides the data repository. Although WSS 3.0 was built to perform with SQL Server 2005, you can also use SQL Server 2008 or the previous version of SQL Server 2000 as your database solution. WSS 3.0 uses the relational database technology of SQL Server to store all configuration, data, and content information.

Windows Server also provides the core and development platform services for WSS 3.0. These include:

- Windows services consumed by WSS 3.0, including the NTFS file system
- Microsoft Internet Explorer 6.0 or Internet Explorer 7.0
- Microsoft .NET Framework 3.0, which includes:

  - ASP.NET 2.0 master pages, web parts, and content pages as well as its pluggable service provider models
  - Microsoft Windows Workflow Foundation (WF), which employs WSS 3.0 as the workflow host for developing routing, approval, and other custom workflows to model business processes
- Internet Information Services (IIS) 6.0

  WSS 3.0 uses IIS websites to host web applications. Keep the following in mind:

A web application is an IIS website that is created and used by SharePoint technologies. Each WSS 3.0 web application has its own website in IIS.

- You must configure the computer to be a web server by enabling IIS 6.0, including common files, World Wide Web publishing service (WWW), and Simple Mail Transfer Protocol (SMTP). IIS is not enabled by default on a Windows server.
- You must also configure the server to use IIS 6.0 Worker Process Isolation Mode. This is the default setting in new installations.

If you are using Windows Server 2000 and have upgraded from IIS 5.0, the setting Run WWW in IIS 5.0 Isolation Mode is enabled. Since each worker process must be isolated for your WSS 3.0 implementation, you must change the IIS setting to IIS 6.0 Worker Process Isolation Mode.

- To enable email notifications, you need to configure incoming and outgoing email settings.
- To configure sending email alerts and notifications, you must specify an SMTP email server.
- To configure your installation so that your SharePoint sites can accept and archive incoming email, you must install the IIS SMTP service.

WSS 3.0 Platform Services

Microsoft's design goals evolved into the platform services of WSS 3.0. The WSS 3.0 Platform Services include the following:

- Storage
  - Organizations need a central repository to store a variety of information and its metadata.
  - WSS 3.0 provides lists, libraries, pages, and sites as containers for storage.

- Security
  - Authorization and authentication must be maintained. Users, whether a part of the organization environment or a public interface, need to be granted security-trimmed access-level permissions.
  - WSS 3.0 supports pluggable authentication and a rights-trimmed user interface.
- Management
  - Organizations need to be able to monitor and manage information from a centralized location.
  - WSS 3.0 provides a Central Administration site for managing information and provisioning of administrative tasks.
- Deployment
  - Organizations need both intranet and extranet deployment strategies. Organizations need to be able to upgrade from WSS 2.0.
  - WSS 3.0 provides in-place and gradual upgrade procedures. It also supports extranet deployments.
- Site Model
  - Users need to have a consistent experience through uniform navigation and site templates.
  - WSS 3.0 allows sites to be developed on site templates and provides both global and current navigation features.
- Extensibility
  - Organizations require web services support and the ability to create custom applications.
  - WSS 3.0 provides for a variety of external connectivity, such as forms based authentication, and enables you to create custom applications by using object model enhancements.

WSS 3.0 Collaboration Service

Organizations require collaboration for their users to stay connected and be productive. WSS 3.0 provides out-of-the-box (OOB) collaboration features to enable your organization's employees, business partners, and customers to share information such as documents and events and to work together in a friendly environment.

Here are the collaboration features WSS 3.0 provides:

Online Presence Online presence offers synchronous communication among your team members. User status is extracted and integrated into WSS through Microsoft Active Directory, Microsoft Exchange, and Windows Messenger. Presence can be discovered by using web parts that enable your team to see if their coworkers are available for real-time conferencing or message exchanging.

Team Sites Team sites provide a central portal for information worker resources. They provide a home page and OOB lists and libraries for collaboration, such as Announcements and Calendar lists and a Shared Documents library. You have other list and page templates available for a variety of your collaboration needs.

Meeting Workspaces Meeting workspaces are team sites that enable you to plan, organize, and track your meetings. They provide a home page with lists for you to include information about your meetings, such as objectives, agendas, attendees, tasks, and decisions.

Wikis Wikis are open sites where your users can freely create and edit content. Its value stems from the collaborative authoring of your users. Your team can share information readily using wikis.

Blogs Blogs are online journals. The name is taken from "web logs." The blog is owned and maintained by its author, the blogger, who uses the area to document information of interest. Readers can post comments on the site in reference to the blog. A blog site can also be used by your team members to disseminate and share information.

Web Parts You can think of a web part as a single-purpose, modular unit of information on a page. Web parts themselves are software components that are customizable through a tool pane when placed into a web part zone on your page. WSS 3.0 has many built-in web parts; however, you can also import or add web parts from other reliable sources into your WSS environment.

Discussion Boards Discussion boards provide a conversation mechanism for your team members. Many features are built into the boards to supply security for approval of entries as well as the control needed to manage the discussion threads.

Issue Tracking Issue tracking helps your team maintain and manage issues and problems throughout the enterprise. It allows you to assign, prioritize, and follow the complete progress of your issues.

Contact Lists Contact lists enable your team members to create the details of information for others they work with. Contact lists facilitate communication by keeping information available in a single location.

Integration Features WSS 3.0 supports close integration with all Microsoft Office products, most particularly the Office 2007 line of products. Furthermore, WSS integrates with Microsoft Office SharePoint Designer 2007 for customizing your sites, with Microsoft Exchange for providing mail service, and with Active Directory and Information Rights Management for security. You can also provide secure offline data access through a variety of connection services.

Why Use WSS 3.0?

As you consider a collaboration solution for your organization, you should also consider what that solution will provide to be effective. If you build it, they will not always come. A successful solution requires the synergy of the users to be a part of its implementation,

support, and use. Furthermore, it requires keeping the total cost of ownership (TCO) as low as possible.

Let's take a quick look at some reasons solutions fail, just to make certain you cover all bases in your implementation of WSS 3.0:

No Governance We have seen a large number of implementations fail because a governance plan was not put into place. Governance defines WSS 3.0 as a service with a plan describing service-level agreements (SLAs), adoption policies, usage, and support.

Lack of Security Quite often an organization is seeking a solution deployment that will be used both internally and externally. Often solutions do not provide an easy mechanism for external security.

Inability to Integrate Custom Applications Most organizations require several specialized line of business (LOB) applications. If there is no easy way for users to implement these systems with one another, they will lose not only time but also data consistency with data transfer.

Expense Custom applications and solutions that are written in-house are expensive to create and maintain. You need a group of developers always available for changes, maintenance, and updates.

Difficulty of Use Well, this is a no-brainer. The solution might be terrific, but if your team members don't think it is intuitive to use, it will be ineffective.

High Training Costs To keep down the cost of training, organizations often resort to training small groups of users and expect them to transfer knowledge to the remainder of the team. This process often leaves gaps in knowledge transfer, consequently leading to users being slow or even adverse to adopting the new solution.

Lack of Ownership If your users do not see a personal business benefit, even if all other needs are met, they will be slow to use it. If your users feel that someone has pushed the solution on them, it decreases their desire to use it. You need to find a way to create the synergy we mentioned earlier. Users should be involved in both creating and maintaining the solution.

Top 10 Benefits of WSS 3.0

So, just what does WSS 3.0 bring to the table with regard to providing a robust, easy-to-use, and definitive solution? The Microsoft SharePoint team provides us with the following top 10 benefits of WSS 3.0:

1. **Improve productivity with ease-of-use collaborative tools.** Your users can connect easily and readily with the collaborative tools WSS 3.0 provides. Your team can create workspaces, blogs, and wikis for customized information sharing. In addition, your

mobile users can take SharePoint with them by using WSS 3.0's offline synchronization capabilities.

2. **Manage documents easily and securely.** Your team can build on the capabilities of WSS 3.0 to provide a secure repository using your document management requirements. You can check out documents prior to editing, view and retain revisions, as well as control security at the item level, and these are just a few of the included features that are readily available.

3. **Get your team on board quickly.** WSS 3.0 integrates readily and provides navigation and tool panes similar to other products in the Microsoft Office suite. Its familiar interface makes it easy for users to get up to speed quickly. The integration of WSS 3.0 with the Office products enables your team to easily work within either venue for their information handling. As an example, your team can create workspaces, create and edit documents, as well as view and update calendars on WSS 3.0 sites while working in their Microsoft Office programs.

4. **Deploy business process solutions quickly.** Your team can use the application templates WSS 3.0 provides to quickly get started with business tasks. Further customization can be accomplished by using development tools specifically designed for WSS 3.0, such as Microsoft Office SharePoint Designer 2007.

5. **Establish a collaboration environment quickly.** WSS 3.0 is scalable and easy to administer. With proper planning, your organization can begin using WSS 3.0 on a small-scale, single-server deployment and branch out to a more robust enterprise configuration. Your organization can change many deployment settings as well as add new features after initial deployment. This enables you to start your collaboration environment more rapidly.

6. **Secure your business information.** WSS 3.0 has controls for life-cycle management of your business information. The central administration feature for your farm enables your administrators to secure resources and membership permissions.

7. **Control your company resources.** You can decide who handles your WSS 3.0 site resources. Your SharePoint administrators can set top-down policies for administering users and groups as well as content recovery. Teams can set permissions at the document or item level and also initiate self-service collaborative workspaces.

8. **Enable robust storage capabilities.** The compliant document storage and retrieval functionalities of sites and workspaces rival third-party document storage applications without the extra tedium of learning a new application. Along with the check-in/check-out functionality and versioning mentioned earlier, your team is able to access information using customizable views and specially created metadata.

9. **Customize the solution to fit your business needs.** You can easily customize your environment through the web browser or command-line utilities. For further customization and branding, you can use Microsoft Office SharePoint Designer 2007 or Microsoft .NET Framework 3.0 utilities and applications.

10. **Build web-based applications cost effectively.** WSS 3.0 is a part of the .NET Framework family. You can use these common resources to fine-tune your websites to meet the specific needs of your organization.

Understanding the Technology Features of WSS 3.0

WSS 3.0 has many new features and enhancements to help you deploy and maintain your SharePoint solution. You now have a multi-tier administration model so that you can delegate your administrative responsibilities. You can take advantage of new and enhanced compliance features to manage your business critical data. You have at your disposal improved operational tools that enable you to maintain reliability and availability of your information. Furthermore, you have the ability to add users from other data sources outside Active Directory.

Let's take a closer look at these enhanced technology features, which include enhancements to:

- Administration model
- Compliance features
- Operational tools and capabilities
- Network support
- Extensibility

Administration Model Enhancements

WSS 3.0 includes several enhancements to the administration model. Included is a new model for centralized management and configuration. This model enables you to manage and administer your tasks more efficiently.

Centralized Configuration and Management

The administration model includes a centralized configuration database to synchronize management and configuration settings for all the servers in your WSS 3.0 farm. You no longer need to manage your server farm configurations on a server-by-server basis.

A server farm is a collection of logical servers grouped together to accomplish server needs that exceed the capabilities that one machine can provide.

Two new services, the Windows SharePoint Services Administration service and the Windows SharePoint Services Timer service, are responsible for facilitating this centralized configuration model. You can think of the Windows SharePoint Services Timer service as the heartbeat for the server farm. This service runs timer jobs that propagate the configuration settings across the farm. You use the Windows SharePoint Services Administration service to carry out the actual configuration changes. The two services work together to complete your administrative tasks effectively and efficiently.

Two-Tier Administration Model

A two-tier administration model enables you to separate administrative responsibilities:

Tier 1: Farm Administrator Tier 1 management encompasses the central management of the entire server farm. As a Tier 1 administrator, usually a member of your company's IT department, you perform the management of your farm-level resources.

Tier 2: Site Administrator or Site Owner Tier 2 management includes the management of sites within the farm. As a Tier 2 administrator you perform the management of resources at the site level. This management tier is typically performed by a business unit site administrator who is not necessarily a member of the IT department.

This multi-tier model allows a delineation and separation of administrative responsibilities. This delegation of responsibilities enables IT professional to concentrate on IT roles, leaving the management of individual site resources to those business professionals most in touch with their needs and information.

Farm-Based Central Administration User Interface

WSS 3.0 provides a redesigned central administration site. As a farm administrator, you can access key tasks readily from the interface. The Central Administration home page provides easy navigation to the Operations and Application Management pages. On the Operations page, you are provided with links to manage entities such as farm-wide services as global configurations, security configurations, backup and restore settings, and logging and reporting.

Compliance Features Enhancements

WSS 3.0 offers features to control your information resources more efficiently:

Policy Management You can define policy management that is based on your authentication provider. You can use authentication zones to control group and user access control lists (ACLs). Furthermore, access control is now taken all the way down to the item level.

Auditing and Logging WSS 3.0 allows you to configure auditing and logging for all actions on your sites, on the content within your sites, and on all workflow processes.

Security Trimming WSS 3.0 is security trimmed. Users are allowed to see only that information for which they have permissions. For example, an IT administrator cannot view site content on WSS sites unless he is granted site collection administration privileges. Furthermore, if an IT administrator changes site collection administrator privileges, an event is written to the Event Viewer application log.

Operational Tools and Capabilities Enhancements

WSS 3.0 provides several new and enhanced tools to assist you in your operations of your SharePoint environment. Here are a few:

Multistage Recycle Bin The multistage Recycle Bin enables users to retrieve deleted items without WSS administrator intervention.

Volume Shadow Copy Service WSS 3.0 has an enhanced backup and restore capability that supports Volume Shadow Copy Service.

Gradual Upgrade Gradual upgrade provisions have been created so you are able to upgrade from WSS 2.0 without interrupting your business processes.

Reparenting You can also reparent in WSS 3.0; that is, you are able to change the structure of your WSS site hierarchy.

Managing Service Accounts SharePoint Central Administration enables you to manage all your service account credentials.

Stsadm Command-Line Tool The command-line tool `Stsadm.exe` has enhanced capabilities. For example, you are able to rename your web servers and back-end database servers.

Network Support Enhancements

WSS 3.0 has enhanced support for your network configurations, including:

Alternate Access Mappings Alternate access mappings in WSS 3.0 provide the mechanism for adding and handling new front-end web servers to your web application. For example, if your initial installation of WSS 3.0 is on a single front-end server, your users just browse

to your server, which renders the content they need. If you add an additional server, users will not be able to access the content of this server through the web application until you add it to the alternate access mapping.

Pluggable Authentication You can use non-Windows-based authentication providers to access WSS 3.0. Your users can be a member of identity databases other than Active Directory. The pluggable authentication of the Microsoft ASP.NET forms authentication system is now integrated into WSS 3.0. Any data storage can be used as a membership provider, such as a SQL database or even a list on your WSS site.

Extensibility Enhancements

WSS 3.0 has several extensibility enhancements you can use on your sites to improve their functionality or to customize them.

Creating and Deploying Features

Feature creation and deployment allow you to immediately add functionality to your sites. You can create new or build on existing site definitions by employing *Features*. Your developers build Features using Visual Studio; however, WSS 3.0 administrators deploy the Feature solution through the Stsadm command-line tool or SharePoint Central Administration.

Creating Custom Applications

By using Microsoft Office SharePoint Designer 2007 or Visual Studio, you can extend WSS 3.0 by creating custom applications. The significance of using WSS 3.0 is that it not only provides the interface to the application data through web services, but also provides the capability of creating the custom page the user will access to interface with the application.

Hosting Workflows

WSS 3.0 provides the hosting for Windows Workflow Foundation (WF). As part of the .NET Framework, WF has no executables and is dependent on WSS 3.0 to execute the persistence, transaction, scheduling, and tracking services it requires.

Planning, Planning, and Planning a WSS 3.0 Solution

Did we mention you should plan? As you have learned, for your implementation to be effective, it must embody the synergy of the users who implement, support, maintain, and use it. We love that word to describe WSS 3.0, since synergy describes a situation where the

outcome is greater than the sum of its parts. So, your objective in planning is to make your WSS 3.0 solution a truly synergistic collaboration.

As you plan, you need to reflect once more on the design goals of WSS 3.0. Which goals, and hence which services, pervade and provide for your users' needs?

There are several factors you should consider in planning your solution:

- Determining the purpose of your solution
- Determining the needs of your users
- Determining the number and types of users

Determining the Purpose of the Solution

Each WSS 3.0 site you create provides its own set of blocks: home page, lists, libraries, and security implementation. Before you can start putting the blocks in place, you need to identify your users' vision of this workspace. You must identify what you want to accomplish with the structure. Once you have the objectives in place, you must determine the primary environments you can use to meet them.

Determining the Objectives

We have already mentioned the word plan, but now we're giving you one further piece of advice: listen.

Real World Scenario

Involving Stakeholders

One of the most successful implementations we were involved with had to do more with talking and listening than with planning; the planning evolved readily from the listening. As we were in the process of looking for a better solution, we interviewed stakeholders at all levels. Also, we met those stakeholders in their own environments; we went to their workspaces so they could show us their needs and ideas to make their jobs more productive and at the same time easier. We found the most important concepts that we were able to build on came from those stakeholders who had direct contact with the everyday data. When we reconvened from our interviews with our findings, the objectives and needs of our solution were easily identified. Once we built our concept of those findings, we took our prototype to the stakeholders. Once again we listened and took appropriate action with the design. By time we rolled out the initial phase of our implementation, our stakeholders were anxious to be trained and use the solution. They saw their ideas in action; they felt ownership.

Your WSS 3.0 environment is very flexible. However, you need to focus on some primary objectives for your sites. The design of a site needs to reflect its purpose. For example:

- Will the site be used for team collaboration? Is it a place to share ideas?
- Will the site be used as a document repository? Do document management features need to be in place?
- Will the site be used for reporting? How do you connect WSS 3.0 to the back end data?
- Will the site be used for communication? Will users be accessing announcements or forms? Will the site display events through a calendar interface?

If you are nodding your head or answering yes to several of these questions, you should think about creating multiple sites. Remember, you want them to come. And once they are there, you need to remind them why they came.

So, here is the short list of objectives for WSS 3.0 sites:

- Collaboration
- Document storage
- Information reporting
- Communication

If you find yourself in the predicament of only having one site but with multiple objectives, you need to be very precise in organizing your home page so users are able to identify the purpose of coming immediately.

Identifying the Primary Environments

WSS 3.0 can live in several environments. To effectively plan your sites, you need to identify the environment(s) in which it will live.

Typically companies create intranet sites and use them for collaboration. However, you have seen that WSS 3.0 has so many features to offer; it is time to start thinking outside of the box. Don't forget to listen to those stakeholders.

Here are the primary environments for WSS 3.0:

Intranet An intranet site most often includes user contribution. Some users will interact with the site's structure, others will contribute to the site's content, and others will merely view the site.

Extranet An extranet could be nothing more than allowing out-of-the-office access to your intranet site for your authenticated intranet users. On the other hand, an extranet environment could be strictly conceived for only external users and serve such purposes as sharing necessary information with other partners on a common project. For either

of these scenarios, you need to determine the authentication (who has access) and their authorization (what they are allowed to access) from the extranet zone.

Internet An Internet solution has yet another set of security objectives. If you are providing a service or promoting your company, you typically do not want to restrict access to your site for viewing. However, you want to tightly control who can add content to the site. Often an Internet site is used for ordering or collecting feedback from its users; that is, you want the users to register and later sign in to have access to the content of your site. For this scenario, you need to create a means of authenticating to the site and storing that authentication.

Zones represent different logical paths of authentication to the same web application. You can create up to five zones for each web application: Default, Intranet, Extranet, Internet, or Custom. You use zones to enforce sets of access policies for different classes of users.

Determining User Needs

Once you have delineated the objectives for your WSS 3.0 solution and sites, you need to define any further user needs and special requirements. You can then decide what features to implement to support these needs.

Identifying Your Users' Needs Your users might have needs that should be addressed at the time of planning.

Here is a sample list of some user needs that would need special considerations:

- Connecting with back-end systems
- Using the WSS 3.0 site while traveling or working offline
- Receiving information regarding changes to the site
- Sending email to the site
- Using wiki or blog sites

Identifying Special Considerations You need to identify any necessary requirements that evolve from the environments being used.

Here are some areas that require special considerations while planning your solution:

- Determine if your solution requires integration with LOB applications.
- Identify the client applications in your organization that will be interacting with WSS 3.0.
- Determine the servers in your organization that will be interacting with WSS 3.0.
- Identify whether custom applications need to be interfaced with your solution.

- Determine if there are additional feature requirements that need to be deployed or added to the original definition of the site.
- If your WSS 3.0 solution is part of a hosting company, determine the additional applications, such as billing or auditing, that must interface with your solution.

Determining Which Features to Use Once the needs and considerations have been recognized, you need to determine what WSS 3.0 features map to them. This step is important because you need to determine any special requirements that you need to have in place so that you can implement the feature.

Tables 1.1 through 1.5 list some of the most prevalent WSS 3.0 features.

TABLE 1.1 Communication Features

Feature	Description	Special Planning Considerations
Announcements	Share news and information	
Shared Calendar	Schedule and share events	
Links	Share data in other locations through links	
Email	Send information to a list	Requires an SMTP mail server
Survey	Collect data from users	
Presence	Determine who is online	Requires a client application to process presence information — for example, Windows Messenger

TABLE 1.2 Collaboration Features

Feature	Description
Discussion board	Share ideas and discuss
Issue Tracking	Track issues
Contacts	Store contact information

TABLE 1.3 Document Storage and Workflow Features

Feature	Description	Special Planning Considerations
Document library	Store, share, present, and track documents	Need to plan for supported content types and metadata
Picture library	Store and share pictures	
Tasks	Assign and track tasks	
Recycle Bin	Recover deleted items, documents, and lists	Need to determine Recycle Bin configurations

TABLE 1.4 Information Management Features

Feature	Description	Special Planning Considerations
Alert	Track changes to documents, items, lists, libraries, or the entire site	
RSS feed	Subscribe to a site to be informed of what is new or changed	Requires RSS client application
Auditing	Flag what is happening on the site	Determine if you want specific auditing reports
Offline	Take documents or lists offline to continue working	Requires the necessary client application
Mobile	Access the site from mobile devices	
Data connection	Access data from other systems and use web parts to display content	
Search	Find information within a specific site, list, or document library, or across all sites in a site collection	Determine search scopes

TABLE 1.5 Special Site Types

Feature	Description	Special Planning Considerations
Blog	Publish and share owner's thoughts and ideas	Permissions for blog sites are uniquely configured.
Wiki	Participate in peer authoring	
Document Workspace	Publish a document for review or discussion	Use a Document Workspace site only when you need a separate space with unique permissions and specific information surrounding a document. Document Workspace sites can be created from several Windows SharePoint Services–compatible client applications.
Meeting Workspace	Publish meeting agendas and information	Meeting Workspace sites can also be created from Windows SharePoint Services–compatible client applications, such as Microsoft Office Outlook 2007.

Microsoft provides a downloadable "Site objectives and environments worksheet" you can use to determine your user needs and features: `http://go.microsoft.com/fwlink/?LinkID=73269&clcid=0x409`.

Determining the Number and Types of Users

Now that you understand the needs of your users, you should know how many users will access your solution and when they will be using your sites. You also must determine whether your organization has any special access requirements for these users.

Determining the Number of Users

To determine the number of users you need to plan for, you have to identify the total, concurrent, and peak users for your deployment. If you are planning for remote partner users or an Internet deployment, take into consideration the number of users who may access your WSS 3.0 solution.

Use the following metrics:

- Total number of users expected
- Number of concurrent users (those users actively using your sites)
- Average number of users (those users who have open connections to but are not active on the site)
- Number of peak users
- Peak user times

Determining the Types of Users

The next step is to identify how these users will interact with your sites. You must determine what percentage of these users will access the specific features mentioned earlier in this section.

These feature considerations include:

- Communication
- Collaboration
- Document storage
- Search
- Third-party legacy system integration

Identifying User Access Requirements

The final step is to determine the special access requirements your users might need. These requirements will be used to determine the authentication methods and the server configurations for which you need to provide.

The user access requirements you need to determine include:

- Remote access users from your internal organization
- Remote access users from external partners
- General access users from the Internet
- Secure access users from the Internet
- Mobile access users
- Users requiring offline capabilities
- Anonymous users

Microsoft provides a downloadable "Users and user types worksheet" you can use to determine the number and types of users acing your deployment: `http://go.microsoft.com/fwlink/?LinkId=73270&clcid=0x409`.

Planning and Understanding the Logical Architecture

The effectiveness of your deployment depends primarily on how easily your users are able to locate the content they need. The structure of your sites and the architectural components you use provide the keys to a successful deployment and engaged users.

Here are the factors you should consider:

- Understanding the logical architecture components
- Understanding the deployment architecture

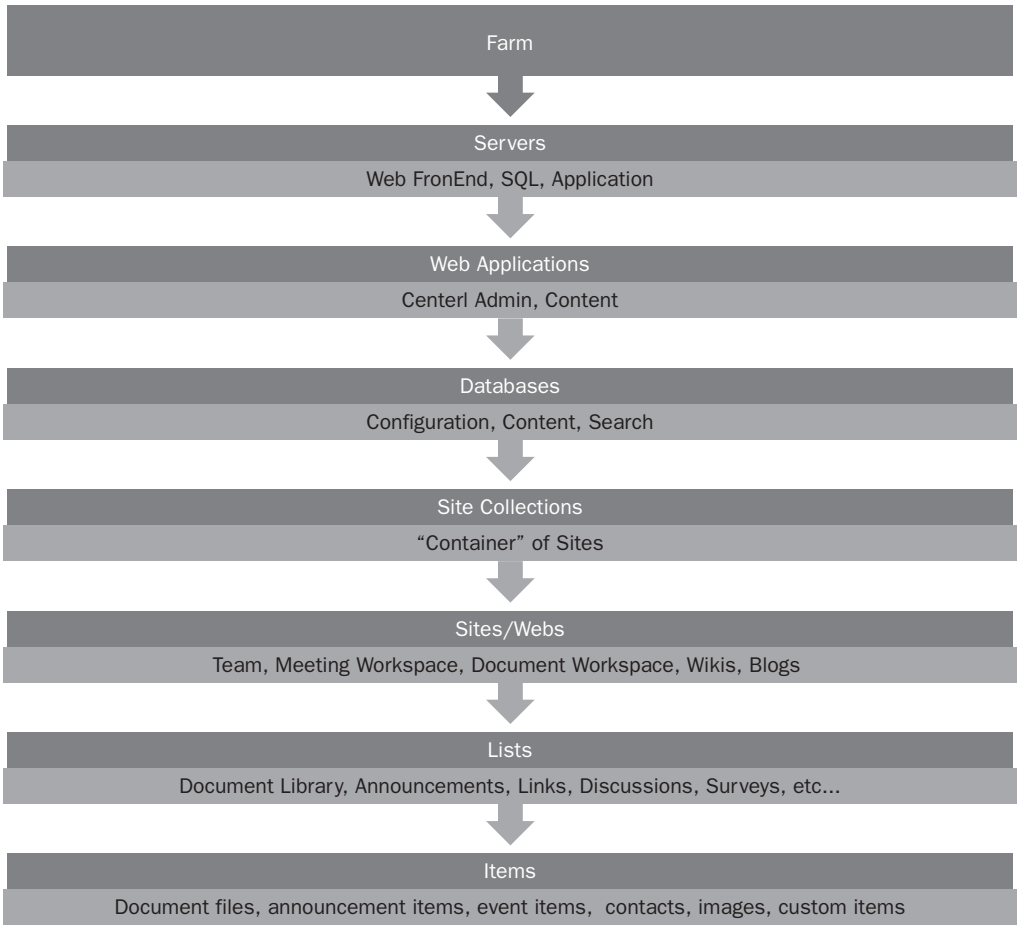
Understanding the Logical Architecture Components

Even though there is an architectural hierarchy, you can arrange the components of your WSS 3.0 logical architecture in a variety of ways. You need to understand the purpose of and how to use effectively each of the components. You also have to understand where each component fits into the structure of the hierarchy.

Once again, we'd like to remind you of synergy. The way you use and arrange these WSS components becomes a vital part of the synergy you create between your WSS implementation and your users. You want your deployment to be vital. You want it to be resourceful. You want it to be scalable. You want your users to enjoy using it.

Let's take a look at the components and see how each one can assist in creating the synergy. Figure 1.2 describes the different components of the WSS 3.0 hierarchy.

FIGURE 1.2 Components of the WSS 3.0 hierarchy



Farm

A farm represents the top level of your design. It is a collection of WSS 3.0 servers the share the same configuration database. The configuration database stores all the necessary information to run the farm. Each farm is administered through a single implementation of Central Administration.

Your organization might require one or many farms. Some criteria that affect the number of farms in your organization include:

- Dedicated resource funding
- Security issues demanding isolation of resources
- Separate application management

- Separate administrative responsibilities
- Separate locations of datacenters
- The requirement of more than one language for content and requests in your solution (all instances of WSS 3.0 in the farm must be in the same language)

There are means to resolve the isolation issues while using a single farm. For example, at the web application level, you can use separate web applications to achieve isolation. At the process level, you can achieve isolation by using different IIS application pools, with each having its own process identity.

An application pool is a set of one or more websites in IIS served by a worker process. Each application pool has its own identity or security account and its own worker process. This process isolation prevents processes from interacting or interfering with one another. This isolation is also important to understand when you are making configuration changes for your websites. If it becomes necessary to restart services, you can recycle the application pool for the site rather than resetting your entire IIS server.

Servers

The types of servers as well as the number of servers influence your farm topology. Each server of your farm is configured for a specialized role, such as a web front-end server, database server, or search server. Server topology and roles are discussed further in the next section.

Web Applications

A web application is an IIS website that is created and used by WSS 3.0. Each web application corresponds to a different website in IIS and is assigned a unique domain name.

Since each ASP.NET page creates a dynamic-link library (DLL) to the web application, with each DLL consuming memory, the number of web applications running on a server is limited to 99.

Each web application has up to five zones that can be used to create separate access and policy conditions for user group types. These zones include Default, Intranet, Extranet, Internet, or Custom. Each zone is represented by a different website in IIS.

When your web application is created, it is created in the Default zone. The Default zone is perhaps the most important zone to consider:

- The Default zone must be the most secure zone since, if a user cannot be mapped to one of the other zones, the Default zone's authentication methods will be applied.
- Administrative email is linked to the Default zone. Site owners and administrators who require alerts and administrative email messages must be able to access links through the Default zone.

- Host-named site collections are available only through the Default zone. This means that any user who is accessing your site through its host-header name must have access through the Default zone.
- The indexer needs access through at least one zone to crawl content. The default authentication method for the indexer is NTLM; however, it can be configured to authenticate using either basic authentication or a client certificate.

The crawler polls zones using the following order: Default, Intranet, Internet, Custom, Extranet. However, if the crawler first encounters a zone using Kerberos authentication, it will not authenticate and it will not proceed to the next zone to attempt further authentication.

You can later extend the web application to any of the other four remaining zones. Each zone can be configured for a different authentication provider, security level, web application policy, or alternate access mapping.

You use alternate access mappings whenever you want to map internal URLs to a single public URL.

Databases

WSS 3.0 uses either the Windows Internal Database (WID) in the single server Basic installation or SQL Server database.

Here are the databases created with WSS 3.0:

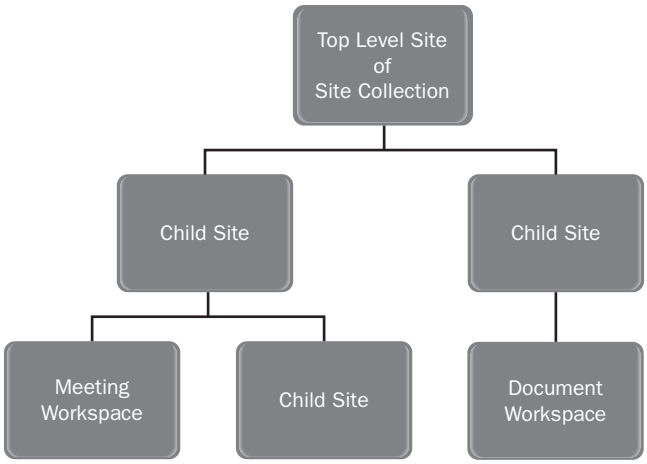
- The configuration database holds the settings that manage the farm. There is exactly one configuration database per farm.
- The Central Administration web application database is created to hold the content for the Central Administration application.
- A content database is created for each web application. It contains content and configuration information for the web application. As site collections are added to the web application, their content is stored in the same web application content database by default.
- The Windows SharePoint Search database holds the search content for the farm. There is only one search database per farm.

Site Collections

A site collection is a set of websites that have a common administration unit and owner. Every site collection consists of a top-level website that is created at the time the site collection is created. This top-level site can include one or more child sites.

Figure 1.3 shows the site hierarchy of a site collection

FIGURE 1.3 Site collection hierarchy



The recommendation for the number of site collections per web application without degrading performance is 50,000.

You can share the following within your site collection, but not between site collections:

- Master pages
- Page layouts
- Images
- Site templates

Permissions, navigation, and search features are also isolated within a site collection as follows:

- Site collections have no built-in navigation between them. You need to provide the necessary links.
- Permissions cannot be inherited from one site collection to another.
- Subsites within the same site collection are able to inherit permissions from the top-level site.
- The WSS 3.0 search feature provides search results only within the current site collection.

The following are configurable within a site collection:

- There can be only one primary site collection administrator and one secondary site collection administrator.
- You can apply quota templates within a site collection. The provided templates include 2,000MB for a team site.

You can use managed paths to contain multiple site collections within a single web application. Here are some factors regarding managed paths:

- By default, when you create a web application, two paths are created for you: the root path and the sites path.
- The root path (/) is an explicit inclusion that can contain exactly one site collection. As an example, if you want the URL of your deployment to be `http://mycompany/default.aspx`, you would use the root path to create the site collection.
- The sites path (`/sites`) is a wildcard-included managed path that can contain several site collections. The term *included* comes from the fact that WSS 3.0 includes them as part of its virtual web. As an example, if you want to have separate site collections for department A and department B in your company, you could use the sites path and create the URLs as follows: `http://localhost/sites/DeptA/default.aspx` and `http://localhost/sites/DeptB/default.aspx`.
- If you have a number of site collections and you do not want to use the sites path, you have the option of creating your own named paths. In the previous example, for departments A and B you could use an explicit managed path such as department. This yields the following address: `http://localhost/department/DeptA /default.aspx` and `http://localhost/department/DeptB/default.aspx`.

WSS 3.0 also supports host-named site collections as well as path-based site collections. When you deploy a host-named site collection, you can map WINS or DNS entries to the site collection in the web application. Host-named site collections enable WSS 3.0 to use host header names rather than managed paths to determine the site collection a user would access when entering a particular URL. Host-named site collections and path-based site collection can live together in the same web application.

Sites

A site is a website comprised of `.aspx` pages that display information and manage data that is stored in lists and libraries. Sites are created using templates, such as a team site, document workspace, wiki, or blog. Therefore, whenever you create a new site, you need to choose a template for that site. Once a site has been created, you cannot change its template. So, once again, you need to plan ahead. Top-level sites, referred to as root sites, are the same as any other sites in the site collection; however, they also provide links to manage the site collection and contain galleries to hold templates for creating web parts, sites, lists, and workflow.

A *web* is another name for a site and is often used by programmers. This term comes from the WSS 3.0 object model where the site object is named SPWeb. Within the object model, the site collection object is named SPSite. We realize this is rather confusing, but it's just the way it is!

Sites that you create below the root site are often referred to as child sites or subsites. Again, users often get confused thinking that there is something different or special about them, but they are just plain old sites, created with the same templates.

Lists

You use lists to contain and group together the information you store on a site. A library is a special type of list that uses templates to define the type of content it stores. For example, you can have a document library, an image library, a forms library, and so on. Both lists and libraries are created by the same object in the WSS 3.0 object model, SPList.

What makes lists, and also libraries, so special in WSS is the additional information or metadata that is collected and retained with each item. Retaining metadata that you can use for viewing and reporting makes lists and libraries very powerful tools.

Depending on the site template you choose to create your site, a variety of library and list templates are also created. Each list or library template has default metadata assigned that is designed to collect information particular to that list type. The great part is that you are able to add additional metadata, even metadata that you create yourself, to any list or library.

Items

An item is the individual piece of information you store within a list or library. You can think of an item as a row in a web-based spreadsheet. An item is also contained in the WSS 3.0 object model SPItem. We mention this because an item is the smallest unit in WSS 3.0 on which you can apply permissions, workflows, and other management features. So with every item you create in or upload into WSS 3.0 you have associated metadata and management.

Understanding the Deployment Architecture

Implementations of WSS 3.0 can range from a single computer (a stand-alone installation) to many computers (a server farm). You can use the single-server approach, with all WSS 3.0 components residing on one server, or you can build your server farm using clustering technologies. Whether you use a single- or multiple-server approach, you need to understand each server's role. Furthermore, you need to understand how the topology you create can be configured as your future requirements change.

Understanding the Server Roles

WSS 3.0 components map to three server roles:

Web Front-End (WFE) Server The WFE is a fast, lightweight server that responds to your users' web page requests. This server is often referenced as the first tier in the implementation since it is the first server in the farm to interact with the client. IIS serves the web pages to the user. If you use multiple WFEs, the user requests must be managed and synchronized. Network load balancing (NLB) is the clustering solution used for multiple WFEs.

Search Server The middle tier of WSS 3.0 includes a search server. It is the search server's job to index the content at scheduled times for faster retrieval. The search and indexing

services must always be on the same physical server. The search server keeps records of keywords, location, and the properties of documents. In WSS 3.0, search results are limited to a site and its subsites.

If the query load becomes too great, additional search servers can be added to the farm to increase the speed of the queries. If your WSS 3.0 requires more robust searching capabilities with larger scope, WSS 3.0 search can be easily replaced using an enterprise solution such as Microsoft Search Server 2008 or the search feature of Microsoft Office SharePoint Server 2007.

Database Server The third tier is the SQL Server that holds the WSS 3.0 databases. There are three databases of note: the configuration database, the central administration database, and the WSS search database. All three of these databases are created at the time of installation of WSS 3.0. In addition, a new content database is built when you create each new web application in your WSS 3.0 environment.

Understanding Scalability Options in WSS 3.0

As you continue to plan your WSS 3.0 deployment, it is important for you to know not only what roles your servers perform, but also how and whether to scale up or scale out your farm to handle the increasing needs of your users.

Scaling Out

In general, scaling out is used to increase capacity or performance. One method of scaling out your topology is to separate your WSS 3.0 server services onto separate physical servers. For example, you might want to increase your single server topology's performance by placing your SQL Server on a dedicated physical server, thus creating a small farm. To move from a small farm to a medium farm, you can scale out by moving the search server to its own dedicated machine. Scaling out further from a medium farm to a large farm involves adding more dedicated front-end web servers and/or back-end SQL Servers to separate the data.

Scaling Up

Scaling up ensures greater availability and performance. This is handled by adding redundant components. In WSS 3.0 there are two methods for scaling up:

Increasing Performance Capabilities You can scale up by increasing the performance capabilities of your server. That is, you can add processors, increase RAM, or install additional network cards. You can do anything to "beef up" the server.

Adding RAM to the front-end web server gives the server an improved capacity for caching your web pages. An additional NIC in your servers ensures you have continued network connection if the first NIC fails.

Configuring disk RAID (Redundant Array of Independent Disks) provides yet another scaling up option. Using RAID increases the performance and reliability of your servers

by spreading data over a number of disks. If one disk fails, no data is lost; the system continues to run, albeit less efficiently.

Increasing the Number of Servers You can also scale up by increasing the number of servers on your farm. For example, on a small farm you can increase the number of front-end web servers and cluster them through network load balancing to increase the performance of their services. You could do likewise with your SQL Server by adding an additional server and using clustering to increase availability.

Real World Scenario

Defining Server Resources

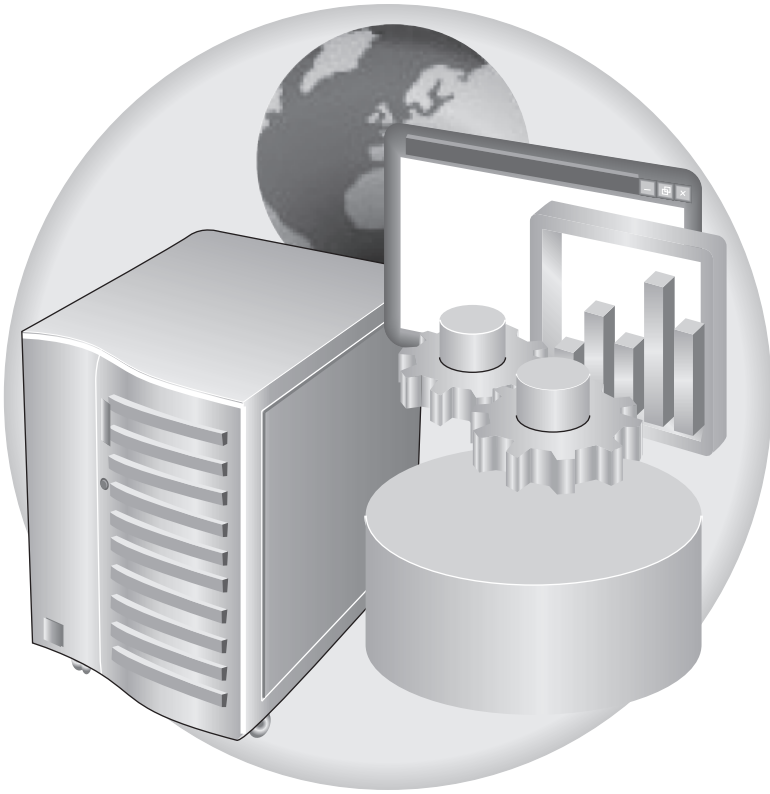
The Human Resources department of Justin's company wants to migrate approximately 25GB of documents to an existing library on its WSS 3.0 site. The HR department also requests version control for these documents. As the WSS 3.0 administrator, Justin needs to ensure that the migration does not impact on the architecture of his deployment, which currently consists of a web front-end server, a dedicated SQL Server, and an additional application server handling the search facilities.

Since the main impact on the topology affects the disk space on the database server, Justin decides to add another SQL Server to the farm. He is also concerned that the number of queries to the site will increase due to the added documents. So he considers adding an additional search server to crawl the migrated content. He is not really concerned with placing additional servers at the web front end since the number of users has not increased, the pages requested will remain the same, and the HR department does not anticipate heavy access to the migrated documents.

Understanding the Single-Server Implementation

When you install WSS 3.0 using the single-tier implementation, you install all the components on one server. You are using a single piece of equipment to render the web pages for your clients, provide search and indexing services, and store all the configuration and content data on the local SQL database. The single server architecture is illustrated in Figure 1.4.

FIGURE 1.4 Single-server architecture



When you use a single-server installation, you have two installation options: Basic installation or Advanced installation. If you choose Basic installation, Windows Internal Database, a relational database based on SQL Server technology, is installed to maintain the WSS 3.0 databases. If you choose the Advanced installation option instead on a stand-alone computer that already has Microsoft SQL Server installed, WSS 3.0 will use the installed SQL Server for its databases.

If you select the Basic installation or select Advanced and then choose the Stand-alone option, you will not be able to scale out to a farm installation. Therefore, if you are starting out small but are looking to scale out your implementation of WSS 3.0, always choose the Advanced installation option.

When you select the Basic installation, these items are automatically provisioned:

- Application pools use the LocalSystem account.
- WSS 3.0 installs Windows Internal Database (WID) for its database component.
- You should be aware that the WID has a 4GB data limitation.

Although the Basic installation enables you to test your WSS 3.0 implementation quickly and without additional costs, it can cause several future issues, including:

- You are unable to add more servers to the farm.
- If you change permissions for the LocalSystem account, you will most likely affect your WSS 3.0 installation.

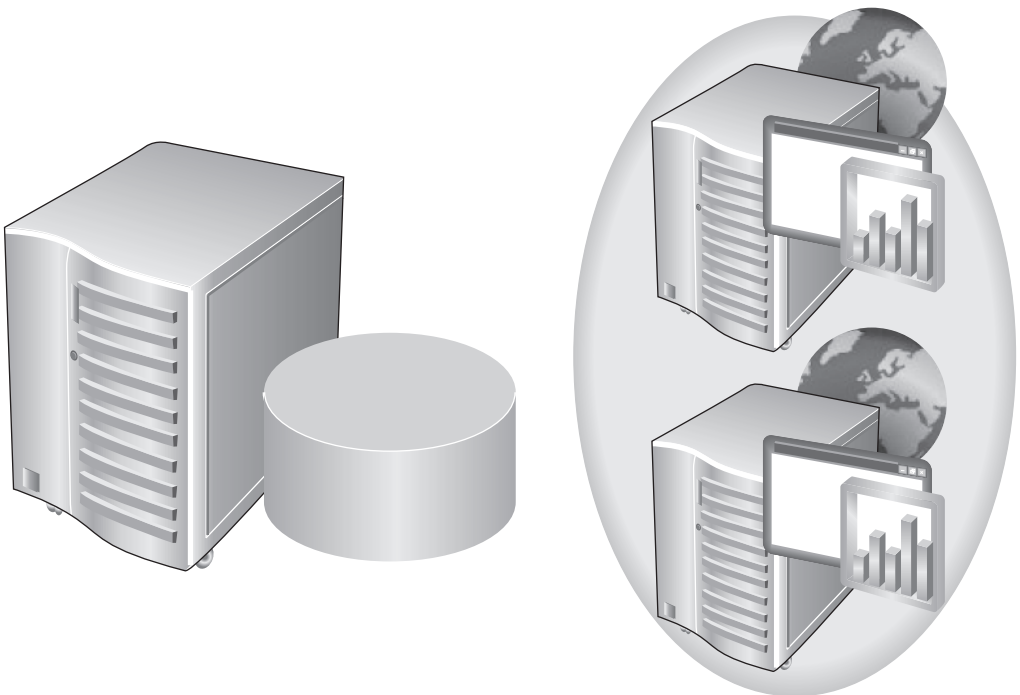
There is no direct upgrade from a Basic installation or an Advanced installation using the Stand-alone option of WSS 3.0 to a farm installation.

If you are looking to provision a WSS 3.0 site for evaluation purposes, the stand-alone configuration is very useful. You can quickly set up your site and be able to spend your time evaluating its capabilities and features. You might also find this configuration a good choice if you are deploying a small number of websites and desire minimal administrative overhead.

Understanding the Small Farm Implementation

If your solution requires the capability to increase capacity or performance, you might want to initially build a two-tier implementation, the small farm. This solution splits the database server from the web and search servers. Furthermore, this scenario offers flexibility for increased load management and higher availability. The small farm architecture is illustrated in Figure 1.5.

FIGURE 1.5 Small farm architecture

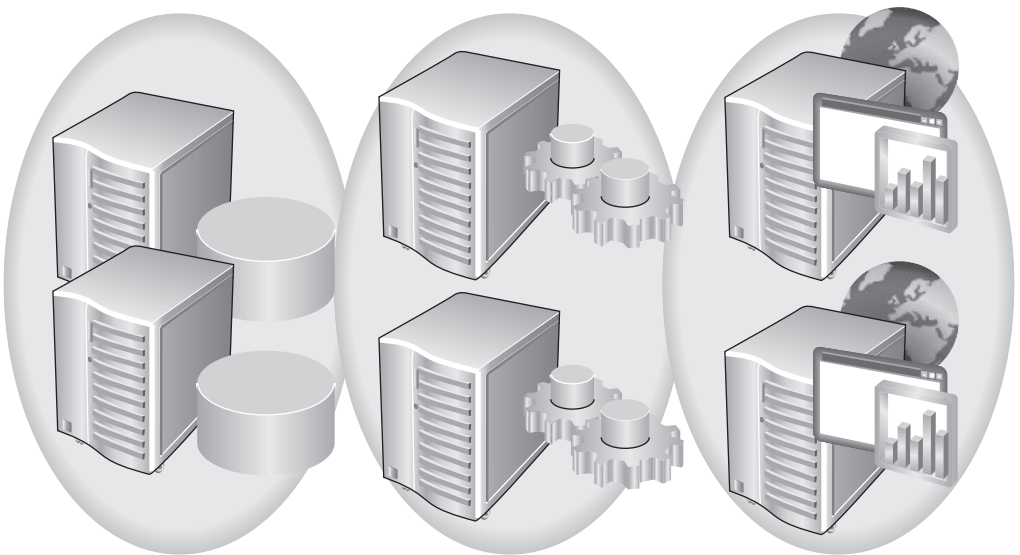


The front-end server is the web server containing the WSS 3.0 and search services. The second physical server contains a dedicated SQL Server containing the WSS databases. Even though the minimum requirement for the installation is two servers, this architecture has the capability of scaling out, as is shown in Figure 1.5 where you see two front-end servers depicted.

Understanding the Medium or Large Farm Implementation

A more robust deployment requires a three-tier implementation, the medium or large farm. At least three physical servers are required: a dedicated web server containing the WSS 3.0 services, a dedicated SQL Server for the WSS databases, and a third server dedicated to providing search facilities as well as other applications. The medium to large farm architecture is illustrated in Figure 1.6.

FIGURE 1.6 Medium or large farm architecture



This three-tier topology provides the most flexibility. The SQL Servers providing the database services can be either a single server or a failover cluster. Furthermore, this topology provides for the separation of the configuration, content, and administration content databases for large environments.

The front-end web server topology can provide higher performance and availability by using network load balancing. Likewise, multiple servers can provide the search facilities.

The three-tier implementation supports a larger user community by providing redundant and extensible database services, improved data storage capabilities, separate search facilities, and faster data return.

Summary

In this chapter you were introduced to WSS 3.0. We examined its components and learned the reasons organizations use WSS 3.0.

We explored the technology features of WSS 3.0, including enhancements in the administrative model, compliance features, the operational tools, network support, and extensibility. We investigated the factors involved in planning your WSS 3.0 solution, including the purpose of the deployment, the needs of your users, and the number and types of users. Finally, we looked at the logical architecture and its components.

Exam Essentials

Be able to configure the WSS 3.0 topology. Know how to configure the logical architecture from planning to design. Understand the two-tier administrative model. Know the various WSS 3.0 topology models and where they are used in business process solutions.

Know the enhancements in WSS 3.0. Be familiar with the new features available in WSS 3.0. Know how you can use the storage, collaboration, compliance, and workflow features to create vital solutions.

Identify the server roles. Understand and be able to configure the WSS 3.0 server roles from planning to design. Understand the scalability of WSS 3.0. Know when it is beneficial to add additional servers to your farm.

Review Questions

1. You are the WSS 3.0 administrator for your organization. Your company has an Active Directory domain. You are planning an installation of WSS 3.0 on a front-end web server with Windows 2003 installed. You need to prepare the server prior to installing WSS 3.0. What should you do?
   - **A.** Install Microsoft .NET Framework 1.1.
   - **B.** Install ASP.NET 1.1.
   - **C.** Enable IIS 5.0 Isolation Mode.
   - **D.** Disable IIS 5.0 Isolation Mode.

2. You are the WSS 3.0 administrator for your organization. You have deployed WSS 3.0 in a small farm implementation with two web front-end servers. A computer running Microsoft SQL Server 2005 is your database server. Your users complain that searches are slow. What should you do?
   - **A.** Add another web front-end server.
   - **B.** Add another database server and create an active/passive cluster configuration.
   - **C.** Add another server and configure it as a search server.
   - **D.** Install more memory in your database server.

3. You are the WSS 3.0 administrator for your organization. You are planning a deployment of WSS 3.0 using a medium server farm implementation. Which of the following actions should you perform before you begin the deployment?
   - **A.** Ensure that all instances of WSS 3.0 in your server farm are in different languages.
   - **B.** Ensure that all instances of WSS 3.0 in your server farm are in the same language.
   - **C.** Install Microsoft .NET Framework 2.0.
   - **D.** Install Microsoft .NET Framework 1.0.

4. You are the WSS 3.0 administrator for your organization. You are going to deploy WSS 3.0 on a single server. Which of the following operating systems can you use? (Choose all that apply.)
   - **A.** Windows Server 2003 Standard edition
   - **B.** Windows Server 2003 Web edition
   - **C.** Windows Server 2008 Standard edition
   - **D.** Windows Server 2003 Enterprise edition

5. You are the WSS 3.0 administrator for your organization. You have deployed a small farm configuration of WSS 3.0 using SQL Server 2003 Standard edition. Your organization has decided it needs to use the Business Data Catalog (BDC) for its LOB operations. What should you do?
   - **A.** Implement a medium to large farm deployment of WSS 3.0.
   - **B.** Upgrade your SQL Server to the Enterprise edition.
   - **C.** Install Microsoft Office SharePoint Server 2007.
   - **D.** Add another SQL Server to hold the data for the BDC.

6. You are the WSS 3.0 administrator for your organization. You have deployed a single-server implementation of WSS 3.0. Your IT team wants to be able to have a location where they can all share information such as bug fixes, configurations, and patches by updating the site themselves. What should you do?
   - **A.** You should create a site collection for the team.
   - **B.** You should create a wiki site for the team.
   - **C.** You should create a blog site for the team.
   - **D.** You should create a web application for the team.

7. You are the WSS 3.0 administrator for your organization. You are ready to deploy WSS 3.0 on a single default installation of Windows 2003 Server. Your server has met all the minimum hardware requirements. What should you do next?
   - **A.** You should install ASP.NET 1.1.
   - **B.** You should enable IIS.
   - **C.** You should configure the file system for FAT32.
   - **D.** You should install .NET Framework 1.1.

8. You are the WSS 3.0 administrator for your organization. You have deployed a single-server WSS 3.0 implementation on a Windows 2003 Server using the Basic installation. After several months, the usage and content has grown dramatically. You have decided to scale out your implementation to a medium farm architecture. What should you do?
   - **A.** You should perform a new server farm installation.
   - **B.** Using the current installation, you should move the existing WSS 3.0 databases to a dedicated SQL 2005 server.
   - **C.** Using the current installation, you should add another web front-end server.
   - **D.** Using the current installation, you should move the existing WSS 3.0 databases to a dedicated SQL 2005 server and the search activities to a second dedicated server.

9. You are the WSS 3.0 administrator for your organization. You need to configure your WSS 3.0 installation so your sites can accept and archive incoming email. What should you do?

A. You should install an Exchange Server on your web front-end server.

B. You should install Outlook on your web front-end server.

C. You should create a new virtual directory in IIS.

D. You should install the IIS SMTP service on your web front-end server.

10. You are the WSS 3.0 administrator for your organization. You have just finished installing WSS 3.0 on a single server so your team can evaluate SharePoint. What do you do next?

A. Create a site collection using Central Administration.

B. Create a web application using Central Administration.

C. Extend a web application using Central Administration.

D. Create a team site using Central Administration.

11. You are the WSS 3.0 administrator for your organization. Your HR department users want to update forms that are stored in a library on their WSS 3.0 site. They also want to keep both the current and updated forms in the library for auditing purposes. What should you do?

A. You should create a renaming procedure for the HR department to keep track of its forms.

B. You should create another library to hold the older forms.

C. You should configure the library to use check-out/check-in procedures.

D. You should configure the library to use version control.

12. You are the WSS 3.0 administrator for your organization. You want to give a few users in the HR department administrative permissions on their HR team site. You don't want to give them more permissions than they should have to manage the site. What should you do?

A. You should make the users site owners of the HR site.

B. You should make the users farm administrators.

C. You should make the users site collection administrators.

D. You should make the users farm owners but give them permissions only to the HR site.

13. You are the WSS 3.0 administrator for your organization. Your developers have created a new onboarding workflow for your medium server farm. They have provided the workflow as a Feature solution. You need to make this Feature available to your farm. Your farm has three network load balanced (NLB) web front-end servers. What should you do? (Choose all that apply.)

A. You should go to each web front-end server and deploy the Feature.

B. You should use the Stsadm command-line utility to deploy the Feature.

C. You should use Central Administration to deploy the Feature.

D. You should use IISreset to deploy the Feature.

14. You are the WSS 3.0 administrator for your organization. You have been charged to deploy a WSS 3.0 public site to promote your products. What should you do?

A. You should create an Intranet solution using a default Active Directory account for all the users who want to view your products.

B. You should create an Internet solution using anonymous access.

C. You should create an Internet solution using Basic authentication.

D. You should use an Extranet solution using forms-based authentication.

15. You are the WSS 3.0 administrator for your organization. You are configuring a newly installed WSS 3.0 single Windows 2003 Server implementation. You want to configure incoming mail services. What must you do before you can accomplish this task?

A. Install POP3 services on the Windows 2003 server.

B. Install SMTP services on WSS 3.0 Virtual SMTP server.

C. Install SNMP services on the Windows 2003 server.

D. None of the above.

16. You are the WSS 3.0 administrator for your organization. You want to customize your sites without a lot of programming. What should you use?

A. Microsoft Office SharePoint Designer 2007

B. FrontPage 2003

C. Visual Studio 2005

D. Visio

17. You are the WSS 3.0 administrator for your organization. You have implemented a medium farm using SQL Server 2005 as your back-end server. You have created a web application called Team. Which of the following databases have been configured by WSS 3.0? (Choose all that apply.)

A. A WSS configuration database

B. A Team configuration database

C. A WSS Central Administration content database

D. A Team content database

18. You are the WSS 3.0 administrator for your organization. You have implemented a WSS 3.0 small farm that is used primarily for department teams. You have just been informed of a new research project for which you need to create a highly secure WSS 3.0 implementation. What should you do?

A. Create a new subsite on your existing Team web application for the research project.

B. Create a new site collection in your existing Team web application for the research project.

C. Create a new farm for the research project.

D. Extend the current Team web application for the research project.

19. You are the WSS 3.0 administrator for your organization. You have deployed a web application for the departments in your organization to share internal information. You want to create a separate site collection for each department. What should you do first?

- **A.** You should use the root path to hold the site collections.
- **B.** You should use the sites path or create an explicit managed path to hold the site collections.
- **C.** You should extend the web application to hold the site collections.
- **D.** You should create an alternate access mapping to hold the site collections.

20. You are the WSS 3.0 administrator for your organization. You plan to deploy WSS 3.0 on five servers. You need to support a large volume of requests and maintain high availability in your implementation. The servers are WSS01, WSS02, WSS03, WSS04, and WSS05. How should you configure the servers? (Choose three answers. Each answer is part of the solution.)

- **A.** Assign WSS01 and WSS02 as database servers using clustering.
- **B.** Assign WSS01 and WSS02 as database servers using network load balancing.
- **C.** Assign WSS03 and WSS04 as Web servers using network load balancing services to distribute the load between them.
- **D.** Assign WSS03 and WSS04 as web servers using round-robin DNS to distribute the load between them.
- **E.** Assign WSS05 the search application role.

Answers to Review Questions

1. D. You should disable IIS 5.0 Isolation Mode. WSS 3.0 requires that IIS is running in IIS 6.0 Worker Process Isolation Mode. Disabling IIS 5.0 Isolation Mode ensures this happens. You should not install Microsoft .NET Framework 1.1. WSS 3.0 requires Microsoft .NET Framework 3.0. You should not install ASP.NET 1.1. WSS 3.0 requires ASP.NET 2.0 or later, which is installed as a component of Microsoft .NET Framework 3.0.

2. C. You should add an additional server and configure it as a search server. A small farm contains two types of servers: a database server and a front-end web server. Offloading the search activity off the front-end web servers and assigning those activities to a dedicated search server improves search performance. Since only search performance is affected in the scenario, you do not need to add another web front end. Adding another database server in active/passive cluster configuration does not improve performance, even if the database server were the bottleneck. Since the only problem users are having with performance is with the search activities and in a small farm the search facilities are contained on the web front end, adding memory to the database server will not improve search performance.

3. B. You should ensure all instances of WSS 3.0 in your server farm are in the same language. When you are deploying WSS 3.0 in a server farm environment, all instances of WSS 3.0 in the farm must be in the same language. If a second language is required, you need to deploy another farm. You should not install Microsoft .NET Framework 1.0 or 2.0; WSS 3.0 requires Microsoft .NET Framework 3.0.

4. A, C, D. You can use Windows Server 2003 Standard edition, Windows Server 2008 Standard edition, or Windows Server 2003 Enterprise edition for a single-server WSS 3.0 implementation. To use Windows Server 2003 Web edition, you must also use a remote SQL Server to store the WSS databases.

5. C. You must install Microsoft Office SharePoint Server 2007. The BDC requires MOSS 2007. Furthermore, it requires the Enterprise edition of MOSS. You cannot implement the BDC using only WSS 3.0 regardless of the version of SQL Server you have installed or how many database servers you have available.

6. B. You should create a wiki site for the team. Wiki sites are open sites where the users can freely create and edit content. A blog site is essentially an online journal and does not satisfy the need for team members to share information with one another. It is not necessary to create a web application or a site collection for their needs. You would still have to create a wiki site.

7. B. You should enable IIS. IIS is not enabled by default on a Windows 2003 server. You should not install ASP.NET 1.1 or .NET Framework 1.1. WSS 3.0 uses .NET Framework 3.0, which includes ASP.NET 2.0. You should not configure the file system for FAT32. WSS 3.0 uses the default file system for Windows servers, NTFS.

8. A. You should perform a new server farm installation. There is no direct farm upgrade from a single-server implementation of WSS 3.0 using the Basic installation option. The Basic option installs Windows Internal Database (WID) for its database component. All the other options are incorrect because they assume that you will still use the current WSS 3.0 installation and just add new servers and move components.

9. D. You should install the IIS SMTP service on your web front-end server. Furthermore, you need to configure incoming email settings in Central Administration. You should not install Exchange or Outlook. You need the IIS SMTP service. You should not create a new virtual directory as it will not provide the IIS SMTP service you require.

10. B. You should create a web application using Central Administration. When the WSS 3.0 installation is complete, your next task is to create a web application to host your site collection(s) and sites. The option to extend the web application is not correct because you first need to create it before you can extend it. Also, you cannot create a site collection or sites until you have created a web application.

11. D. You should configure the library to use version control. Configuring versioning enables users to see just the currently updated document; however, the earlier versions are readily available and stored in the library using their version number. Although the check-out/check-in configuration always is good to make certain no two authors are editing the same content, it does not provide the necessary solution. A renaming procedure is clumsy and is what you would need to use if you did not have WSS or a document management system. Moving the older forms into another library does not satisfy the requirements that the previous versions of the forms be kept in the same library.

12. A. You should make the users site owners of the HR site. A site owner has full management of their site. You should not make them farm or site collection administrators. Either would give them more permissions than they need. There is no responsibility named farm owner.

13. B, C. You should use either the Stsadm command-line utility or Central Administration to deploy the Feature. Both methods deploy the Feature to each and every web front end. The option to deploy the Feature at each front end is not correct. Deploying at each web front end is not long necessary with the latest farm-wide tools. Using IISreset is not correct; this command merely recycles the IIS server. Also, in the instance of deploying the onboarding workflow Feature, an IISreset is not necessary.

14. B. You should create an Internet solution using anonymous access. Since you want all users to view your site, you need to set up anonymous access authentication. All the other options are not correct because they require authenticating to the site.

15. D. None of the solutions provided in A, B, or C are correct. To configure incoming mail in WSS 3.0, you need to install the SMTP services on the Windows 2003 server, not on WSS. POP3 is a protocol to transfer mail on a mail server. SNMP (Simple Network Management Protocol) is used for network management, not mail.

16. A. Microsoft Office SharePoint Designer 2007 has been designed specifically to customize and brand WSS 3.0 and MOSS 2007 implementations. FrontPage 2003 is not correct; it is an older design tool and does not contain the functionality for WSS 3.0 sites. Visual Studio 2005 can certainly be used for customization; however, this is a programming tool. Visio cannot be used to customize WSS 3.0.

17. A, C, D. A configuration database is created for the WSS 3.0 installation. A content database is created for the Central Administration web application. A content database is created for each web application, in this instance, the Team web application. Only one configuration database is created.

18. D. You should create a new farm for the research project. There are times, such as in this scenario, when information needs to be isolated. In such an instance, the most reliable means of isolation is to create a new farm. A new subsite, site collection, or extending the existing web application will not maintain the security isolation required by the scenario.

19. B. You should use the sites path or create an explicit managed path to hold the site collections. The sites managed path, as well as any other explicit managed path, enables you to create multiple site collections within your web application. You should not use the root managed path; only one site collection can be created below the root managed path. Extending the web application enables you to provide separate authentication and authorization rules for your web application; it does not provide for establishing multiple site collections. Alternate access mappings provide URL mappings; they are not used for creating multiple site collections.

20. A, C, E. You should assign WSS01 and WSS02 as database servers using clustering. Then you should assign WSS03 and WSS04 as web servers using network load balancing services to distribute the load between them. Finally, you should assign WSS05 the search application role. Database servers use clustering for high availability; they do not use NLB. However, NLB is an excellent solution for web server load balance; the DNS round-robin feature does not work well with WSS 3.0.